AMENDMENTS TO THE SPECIFICATION

Please amend the specification on page 5, lines 11 through 22, as follows:

(1) In order to attain the above object, the washing method of this invention is performed as follows. A cylindrical basket-like washing tub whose central shaft is disposed in a horizontal direction is disposed in an outer casing. ~~filled with a cleaning liquid and tightly sealed~~. A laundry article is placed in the cylindrical basket-like washing tub. Then a cleaning liquid is fed into the outer casing so as to fill the cylindrical basket-like washing tub with the cleaning liquid. After that, the cylindrical basket-like washing tub is rotated about the central shaft ~~in~~ for washing the laundry article in the near zero gravity state, namely in such a manner that the laundry article ~~maintains a near-zero gravity state~~ floats in the cleaning liquid and is spread out so as to be increased in contact area with the cleaning liquid in the cylindrical basket-like washing tub.

Please delete the paragraph bridging pages 5-6.

Please amend the specification on page 6, lines 3 through 18, as follows:

As used herein, "the near-zero gravity state" does not mean a real zero gravity state in that the weight of a laundry becomes zero ~~but "floating state in the cleaning liquid"~~ but means such a state in which the laundry article floats while being kept expanded in the cleaning liquid. Therefore, certain gravity is exerted on the laundry article disposed in the cylindrical basket-like washing tub. At the same time, since the cylindrical basket-like washing tub is filled with the cleaning liquid, buoyancy corresponding to a volume of the laundry article and a density of the cleaning liquid is exerted on the laundry article. Accordingly, the laundry article floats inside the cylindrical basket-like washing tub. The cleaning liquid is ~~tightly sealed in~~ fed into the outer casing surrounding the cylindrical basket-like washing tub so as to fill the cylindrical basket-like washing tub with. Therefore, the laundry article maintains ~~the near-zero gravity~~ a floating state in the cylindrical basket-like washing tub when the cylindrical basket-like washing tub is rotated.

Please amend the paragraph bridging pages 6-7 as follows:

Since the central shaft of the cylindrical basket-like washing tub is disposed in the horizontal direction, the cylindrical basket-like washing tub functions as a so-called front-loading

design tub. When the cylindrical basket-like washing tub is rotated, the laundry article is maintained in ~~the near-zero gravity~~ a floating state and is spread out in such a manner as to be unfolded in the cylindrical basket-like washing tub. Thus, the contact area of the laundry article with the cleaning liquid is increased, thereby enabling the surfactant contained in the cleaning liquid to permeate deep into fibers of the fabric forming the laundry article. Due to the deep permeation of the surfactant to the fibers of fabric forming the laundry article, contaminations adhered to the fibers are easily removed without the aid of physical external force. That is, the contaminations adhered to fibers are removed easily without the application of mechanical external force to the laundry article and the pounding and twisting of the laundry article by water-current jet.

Please amend the paragraph bridging pages 7-8 as follows:

Due to the wavy patterned surface of the inner periphery of the cylindrical basket-like washing tub, the cleaning liquid moves mildly to the center of the cylindrical basket-like washing tub and then moves in the axial direction when the cylindrical basket-like washing tub is ~~set to the above size and~~ rotated ~~at the above speed~~. The cleaning liquid moving to the center of the cylindrical basket-like washing tub maintains the laundry article at ~~the near-zero gravity~~ a floating state and causes the laundry article to move away from the inner periphery of the cylindrical basket-like washing tub. Particularly, since the wavy patterned surface is ~~in the sine curve form~~ formed on the inner wall surface of the cylindrical basket-like washing tub, a mild current in the form of a swirl generates near an inner wall surface of the cylindrical basket-like washing tub. Due to the swirl, the laundry article is prevented from contacting the inner periphery of the cylindrical basket-like washing tub, and damages on the laundry article are reliably prevented. Further, the cleaning liquid moving in the axial direction from the center of the cylindrical basket-like washing tub spreads out the laundry article in the cylindrical basket-like washing tub. Thus, the cleaning liquid mildly and reliably flows between fibers of the laundry article, and the surfactant contained in the cleaning liquid reliably separates the contaminations adhered to the laundry article from the laundry article.

Please delete the paragraph bridging pages 8-9.

Please amend the paragraph bridging pages 9-10 as follows:

Due to the normal and reverse rotations, the cleaning liquid is regulated to flow in the predetermined direction without fail in the case where the cylindrical basket-like washing tub is rotated at the high speed of 10 or more times per minute. ~~Thus, the near-zero gravity state of the laundry article is reliably maintained.~~ By appropriately setting a cycle of the normal and reverse rotations, the cylindrical basket-like washing tub rotates in a swinging manner like a cradle. Such rotation manner has the advantage that the laundry article is cleaned remarkably softly.

Please amend the specification on page 14, lines 15 through 29, as follows:

The washing tub unit 11 is provided with a casing (outer casing) 17 and a frame body (cylindrical basket-like washing tub) 18. The frame body 18 is disposed inside the casing 17 and enclosed by the casing 17. The casing 17 may be made from a metal such as a stainless steel and an aluminum alloy. The casing 17 is provided with a door 20 disposed at its front face as shown in FIG. 1. The door 20 is provided with a handle 15. A user of the washing apparatus 10 operates the handle 15 to open/close the door 20. The front face of the casing 17 is opened/closed in a liquid tight fashion by the door 20. After the door 20 is closed, a cleaning liquid is supplied as described later in this specification. Thus, the casing 17 is filled with the cleaning ~~liquid and tightly sealed~~.

Please amend the paragraph bridging pages 14-15 as follows:

The casing 17 has the shape of a cylindrical container as shown in FIG. 1. Of course, the casing 17 may have a different shape. In short, it is sufficient that the casing 17 has the shape capable of being filled with the cleaning liquid~~, tightly closed,~~ and housing the frame body 18. The door 20 of the casing 17 may be provided with a window for watching the inside of the casing 17. A transparent acryl plate or the like may preferably be fitted to the window. The provision of such window makes it possible to watch a washing state from the outside.

Please amend the specification on page 17, lines 12 through 23, as follows:

Examples of position ~~Position~~ of the slits 37 and the shape of the inner periphery 39 are ~~as~~ shown in FIG. 3. More specifically, the slits 37 are provided at 6 parts in this embodiment, and the width (length of the frame body 18 in the circumferential direction) of each of the slits 37 is decided by an angle a based on the center of the frame body 18. In this embodiment, the angle a is 8.80 degrees. A distance (length of the frame body 18 in the circumferential direction) between adjacent slits 37 is decided by angles .beta. and .gamma. based on the center of the frame body 18. In this embodiment, the angle .beta. is set to 55.16 degrees, and the angle .gamma. is set to 31.29 degrees.

Please amend the paragraph bridging pages 17-18 as follows:

The wavy shape formed by surfaces of the protruding parts 40 may be formed with ~~forms~~ a sine curve extending along the circumferential direction of the inner periphery 39. Further, successive ~~Successive~~ half-round surfaces may be formed for achieving the wavy shape ~~in the form of sine curve~~. In this embodiment, a pitch p of the protruding parts is set to a predetermined proportion with respect to an inner diameter D of the frame body 18. ~~More specifically,~~ In the example of Fig.4, the pitch p is set to from 5.0% to 15.0% of the inner diameter D. The pitch p may preferably be set to from 7% to 12% of the inner diameter D. The height h of the protruding parts 40 is set to a predetermined proportion with respect to the inner diameter D of the frame body 18. ~~More specifically~~ In the example of Fig.4, the height may be set to from 3.0% to 6.0% of the inner diameter D. In this embodiment, the inner diameter D of the frame body 18 is set to more than 300 mm to less than 500 mm. The inner diameter D can be modified when so required ~~and may be set to from 300 mm to less than 500 mm in this embodiment~~.

Please amend the specification on page 18, lines 12 through 26, as follows:

As shown in FIGS. 1 and 2, the rotation drive device 13 has the drive motor 23. The drive motor 23 is mounted on an end face 21 of the casing 17. A driving shaft 24 of the drive motor 23 is coupled to the central shaft 19 of the frame body 18. Therefore, the frame body 18 is rotated about the central axis N in the casing 17 when the drive motor 23 is activated. The frame body 18 rotates normally (in one direction) inside the casing 17 when the drive motor 23 rotates

normally, and the frame body 18 rotates reversely (in the other direction) inside the casing 17 when the drive motor 23 rotates reversely. For example in ~~In this~~ an embodiment, the frame body 18 is designed to be rotated ~~for~~ at the speed more than 60 rotations per minute and less than 120 rotations per minute. The rotation speed of the frame body 18 may be optionally designed. ~~It is possible to set the rotation speed of the frame body 18 to a rotation speed from 60 to 120 rotations per minute in this embodiment.~~

Please amend the paragraph bridging pages 24-25 as follows:

The cleaning liquid filled in the casing 17 is tightly sealed. The clothes 35 are disposed in the cleaning liquid tightly sealed in the casing 17. Therefore, ~~the clothes 35 are in a state of near-zero gravity inside the frame body 18. More specifically, though~~ a certain gravity is exerted on the clothes 35 in the frame body 18, and buoyancy corresponding to a volume of the clothes 35 and a density of the cleaning liquid are exerted on the clothes 35. Moreover, since the casing 17 is filled with the cleaning liquid, the cleaning liquid fills up the frame body 18. Accordingly, the clothes 35 float inside the frame body 18. ~~That is~~ Thus, ~~the above-described "near-zero gravity state" does not mean a zero-gravity state but means a state in which~~ the clothes 35 float in the cleaning liquid, thereby being. ~~Thus, the clothes 35 and are~~ cleaned softly ~~in the near-zero gravity state~~.

Please amend the paragraph bridging pages 25-26 as follows:

The cleaning liquid moving to the center of the fame body 18 maintains the clothes in ~~the near-zero gravity~~ a floating state and moves the clothes 35 away from the inner periphery 39 of the frame body 18. Particularly, since the inner periphery 39 is ~~in the sine curve form~~ formed with the wavy patterned surface, a mild current in the form of a swirl generates near the inner wall surface of the frame body 18. This swirl like current prevents contact of the clothes 35 with the inner periphery 39 of the frame body 18. Therefore, fabrics of the clothes 35 are prevented from being damaged during the washing. Further, the cleaning liquid moving along the axial direction from the center of the frame body 18 spreads out each of the clothes 35 inside the frame body 18, thereby increasing a contact area of each of the clothes 35 with the cleaning liquid. Therefore, the surfactant contained in the cleaning liquid permeates deep into fibers of the

fabrics constituting the clothes 35. As a result, contaminations adhered to the clothes 35 are easily removed by the action of the surfactant without pounding or twisting of the clothes 35.

Please amend the paragraph bridging pages 26-27 as follows:

In the washing method according to this embodiment, since the surfactant contained in the cleaning liquid permeates deep into the fibers of the fabrics constituting the clothes 35, the contaminations adhered to the clothes 35 are easily removed without application of physical external forces to the clothes 35. Moreover, the clothes 35 are washed in ~~the near-zero gravity~~ a floating state in the cleaning liquid. Therefore, even in the case where the clothes are made from delicate fabrics such as wool, the fabrics are not damaged. That is, the contaminations adhered to the fabrics are removed without deteriorating the shapes and the textures of the clothes 35. Accordingly, this invention enables water washing of the clothes made from delicate fabrics such as wool and reliable removal of water-soluble contaminations such as sweat and mud adhered to the clothes. In addition, this invention has advantages that a finishing work becomes easier and creases hardly occur since the clothes 35 are free from the deterioration in shape.

Please amend the specification on page 27, lines 16 through 26, as follows:

In this embodiment, since the inner periphery 39 of the frame body 18 ~~has the sine curve form~~ is formed with the wavy patterned surface, a mild current is formed near the inner periphery 39 of the frame body 18 when the frame body 18 is rotated. Therefore, the clothes 35 are reliably prevented from contacting the frame body 18 and more gently cleaned. Moreover, due to the prevention of the contact of the clothes 35 with the frame body 18, the clothes 35 are always positioned in the vicinity of the center of the frame body 18. Thus, each of the clothes 35 is reliably spread out, and the surfactant acts effectively.

Please amend the paragraph bridging pages 27-28 as follows:

Also, in this embodiment, ~~the pattern in the sine curve form~~ the wavy patterned surface formed on the inner periphery 39 of the frame body 18 is formed of the protruding parts 40 extending in the axial direction of the frame body 18 and provided along the circumferential direction at a constant interval. More specifically, a wavy and curved thin plate is disposed on

the inner surface of the frame body 18. Thus, the wavy patterned surface is formed simply and at a low cost, thereby suppressing an increase in production cost of the washing apparatus 10.

Please amend the specification on page 28, lines 7 through 16, as follows:

~~Particularly,~~ In addition, it is preferable to set ~~by setting~~ the height h of the protruding parts 40 to from 3.0% to 6.0% of the inner diameter D of the frame body 18.~~,~~ Accordingly, the current of cleaning liquid which is remarkably mild and reliably keeps the clothes 35 away from the inner periphery 39 of the frame body 18 is generated near the inner wall surface of the frame body 18. Thus, the contact of the clothes 35 with the inner wall surface of the frame body is more reliably prevented, and each of the clothes 35 is more reliably spread out at the central part of the frame body 18.

Please amend the paragraph bridging pages 32-33 as follows:

More specifically, the clothes 35 disposed in the washing tub unit 11 are in the above-described ~~near-zero gravity~~ floating state. This state is caused by the buoyancy exerted on the clothes 35. Since certain gravity is always exerted on the clothes 35, the clothes 35 tend to sink to the bottom (in a vertically downward direction) of the washing tub unit 11. Due to the cleaning liquid current oriented upward from the bottom in the washing tub unit 11, the clothes 35 are always pushed upward to be positioned at the central part of the washing tub unit 11. Thus, the clothes 35 are reliably prevented from contacting the inner wall surface of the washing tub unit 11, so that the clothes 35 are reliably prevented from being damaged.

Please amend the paragraph bridging pages 33-34 as follows:

Though the inner diameter D of the frame body 18 of the foregoing embodiment is set to from 300 mm to less than 500 mm, the inner diameter D of this modification example for large size clothes 35 is preferably set to ~~650 mm~~ more than 500 mm to less than 1000 mm. Due to the inner diameter D ~~of 650 mm~~ between 500 mm and 1000 mm of this modification example, it is possible to sufficiently clean a lounge suit, for example. By the larger inner diameter D of the frame body 18, it is possible to sufficiently clean clothes 35 having large size. Therefore, by setting the inner diameter to from 500 mm to 1,000 mm, the washing method is applicable to

commercial laundry. However, with the increase in the inner diameter D, an amount of the cleaning liquid to be supplied to the frame body 18 is increased. Accordingly, the optimum inner diameter for the commercial laundry is preferably from 600 mm to 850 mm. ~~Also,~~ And the rotation speed of the frame body 18 is preferably set to 5 to 60 rotations per minute.

Please amend the specification on page 34, lines 9 through 28, as follows:

In this embodiment, too, the cleaning liquid moves mildly to the center of the frame body 18 and moves in the axial direction from the center of the frame body 18 when the frame body 18 is rotated because the inner periphery 39 of the frame body 18 is ~~in the form of a sine curve~~ formed with the wavy patterned surface ~~and by setting the size and the rotation speed of the frame body 18 within the above ranges~~. The cleaning liquid moving to the center of the frame body 18 maintains the clothes 35 in ~~the near-zero gravity~~ a floating state and keeps the clothes away from the inner periphery 39 of the frame body 18. Therefore, as is the case with the foregoing embodiment, contact of the clothes 35 with the inner periphery 39 of the frame body 18 is prevented, so that the clothes 35 are reliably prevented from being damaged. Further, the cleaning liquid moving in the axial direction from the center of the frame body 18 spreads each of the clothes 35 inside the frame body 18. Thus, the surfactant contained in the cleaning liquid reliably flows between fibers of the clothes 35 to separate the contaminations adhered to the clothes 35 though the flow is mild.

Please amend the paragraph bridging pages 34-35 as follows:

In the case where the frame body 18 is rotated at a speed of 10 or more rotations per minute, the frame body 18 may preferably be rotated normally and reversely with regularity. In the case where the frame body 18 is rotated normally and reversely with regularity, the cleaning liquid will not flow strongly in one direction inside the frame body 18 even if the frame body 18 is rotated at the high speed of 10 or more rotations per minute, and ~~the near-zero gravity~~ a floating state of the clothes 35 in the cleaning liquid is reliably maintained. Also, the frame body 18 may be rotated in a swinging manner like a cradle. It is possible to rotate the frame body 18 in the cradle-swinging manner easily by controlling rotation of the drive motor 23 using the control

device 50. Such rotation manner has the advantage that the clothes 35 are cleaned remarkably softly.